WHAT:

Asphalt road repaving project at Gateway and Concordia Street -- City of Winnipeg, Manitoba, Canada

APPLICATION:

This application is an asphalt road repaving project using Spartan Road Grid™ 10C fiberglass composite geogrid as an asphalt overlay over a tack coated surface.

CHALLENGE:

Low temperatures, seasonal freeze-thaw cycle, moisture penetration and traffic fatigue are all factors that affect the life cycle of roads. Asphalt is a durable and economical material for road construction, but without reinforcement cracks form within the base layers of the road and reflect up into the top layers requiring more frequent repairs and driving up maintenance costs to maintain proper road conditions.

When overlays are done with flexible pavement over concrete the transverse joints of the existing concrete should be reinforced to slow reflective cracking. The existing concrete overlay at this location wasn't performing well. The road had significant path fatigue cracking, indicative of deficient pavement structure, and needed rehabilitation.

CONVENTIONAL SOLUTION:

The typical solution to this problem would be to repair the road by milling and applying a new inlay and overlay however, this does nothing to enhance pavement performance or longevity.

TITAN SOLUTION:

Spartan Road Grid™ 10C fiberglass composite geogrid was identified as the value-added solution to address the city's desire to maximize pavement performance, extend its life cycle and save on maintenance costs.

This geogrid was placed between the asphalt base and top layer to reinforce the overlay/inlay and increase the strength and stiffness of the asphalt.
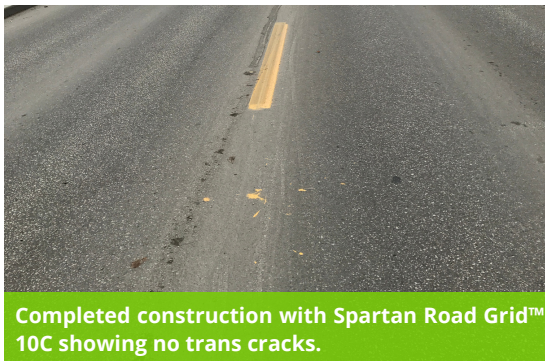
The tack-coat was applied and allowed to fully cure before paving to develop adequate bonding between the Spartan Road Grid™ 10C and the compacted asphalt overly that was placed over top the Spartan Road Grid™ 10C.

Completed construction with Spartan Road Grid™ 10C showing no trans cracks after 2 years.

PRODUCT DESCRIPTION:

Spartan Road Grid™ 10C fiberglass composite geogrid is a biaxial geogrid bonded to a needle punched nonwoven geotextile. It's specifically designed for asphalt reinforcement with an additional moisture proofing benefit. Its composite characteristic provides a continuous non-deforming water resistant barrier. The geogrid is polymer coated which ensures proper adhesion to the asphalt layers over the tack-coat surface, and further optimizes the chemical compatibility between the geogrid and the pavement overlay to create a solid bond of the asphalt layers over the tack coat surface. This bond ensures that the reinforcing grid is in position to effectively accept and distribute tensile stresses. This system offers excellent heat resistance, minimal shrinkage at high temperatures, high chemical, physical and biological durability along with optimal elastic modulus and aperture size. It's biologically unaffected by soil micro-organisms, inert to all chemicals normally found in the soil, and formulated to resist ultraviolet degradation.

BENEFITS:

Reduced overlay thickness (40-50mm) which helped speed up construction and decrease project costs. Additional expected results also include rutting prevention; decreased fatigue cracking; extended inlay life due to minimized and retarded reflective cracking; increased pavement fatigue life; and reduced pavement water infiltration which otherwise weakens the road base and sub-grade.

Completed construction with Spartan Road Grid™ 10C showing no trans cracks.

Completed construction with Spartan Road Grid™ 10C.

PROJECT HIGHLIGHTS:

Project:
Gateway and Concordia Street Road Repaving

Location:
Winnipeg, Manitoba, Canada

Installation:
2016

Owner:
City of Winnipeg

Consulting Engineer:

General Contractor:

Product Solution/System:
Spartan Road Grid™ 10C

Product Supplier:
Titan Environmental Containment Ltd. Manitoba, Canada
(Supplied the products, and offered design service and technical guidance)

Contact us for more information:

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